# The Orbiting Carbon Observatory (OCO) Mission

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If selected by the NASA Earth System Science Pathfinder Program, the Orbiting Carbon Observatory (OCO) will make the first global measurements of atmospheric $CO_2$ with the precision, resolution, and coverage needed to characterize $CO_2$ sources and sinks on regional scales. This mission will fly in a 1:15 orbit, just ahead of the EOS Afternoon constellation. It will carry three high-resolution, grating spectrometers that will measure reflected sunlight in the 0.76 micron $O_2$ A-band, and the $CO_2$ bands at 1.58 and 2.06 microns. A simultaneous retrieval algorithm will be used to analyze these data and retrieve time-dependent global measurements of the column-averaged $CO_2$ dry air mole fraction ($X_{CO2}$) with precisions of 0.3% (1ppm) on regional scales. A comprehensive validation and correlative measurement program has been incorporated into this mission to ensure the accuracy of the space-based $X_{CO2}$ measurements. Once validated, these space-based measurements will be combined with ground-based and aircraft measurements to characterize the geographic distribution of $CO_2$ sources and sinks.